PHILOSOPHICAL TRANSACTIONS.

Monday, *Auguſt* 17. 1668.

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A Contrivance

To make the Picture of any thing appear on a Wall, Cub-board, or within a Picture-frame, &c. in the midſt of a Light *room in the day-time; or in the Night-time in any room that is enlightned with a conſiderable number of Candles; deviſed and communicated by the Ingenious Mr.* Hooke, *as follows;*

THis *Optical* Experiment, here to be deſcribed, is New, though eaſy and obvious; and hath not, that I know, been ever made by any other perſon this way. It produces Effects not

onely very delightful, but to ſuch as know not the contrivance, very wonderful; ſo that Spectators, not well verſed in *Opticks*, that ſhould ſee the various Apparitions and Diſappearances, the Motions, Changes, and Actions, that may this way be repreſented, would readily believe them to be ſuper-natural and miraculous, and would as eaſily be affected with all thoſe paſſions of Love, Fear, Reverence, Honour, and Aſtoniſhment, that are the natural conſequences of ſuch belief. And had the *Heathen* Prieſts of old been acquainted with it, their Oracles and Temples would have been much more famous for the Miracles of their Imaginary Deities. For by ſuch an Art as this, what could they not have repreſented in their Temples? Apparitions of Angels, or Devils, Inſcriptions and Oracles on Walls; the Proſpect of Countryes, Cities, Houſes, Navies, Armies; the Actions and Motions of Men, Beaſts, Birds, &c. the vaniſhing of them in a cloud, and their appearing no more after the cloud is vaniſht: And indeed almoſt any thing, that may be ſeen, may by this contrivance be very vividly and diſtinctly repreſented, in ſuch a manner, that, unleſs to very curious and ſagacious perſons, the means how ſuch Apparitions are made, ſhall not be diſcoverable. The way in ſhort is this;

Oppoſite to the place or wall, where the Apparition is to be, let a Hole be made of about a foot in diameter, or bigger; if there be a high Window, that hath a Caſement in it, 'twill be ſo much the better. Without this hole, or Caſement open'd at a convenient diſtance, (that it may not be perceived by the Company in the room) place the Picture or Object, which you will repreſent, inverted, and by means of Looking-glaſſes placed behind, if the picture be *tranſparent*, reflect the rayes of the Sun ſo, as that they may paſs through it towards the place, where it is to be repreſented; and to the end that no rayes may paſs beſides it, let the Picture be encompaſs'd on every ſide with a board or cloath. If the Object be a *Statue*, or ſome living Creature, then it muſt be very much enlightn'd by caſting the Sunbeams on it by Refraction, Reflexion, or both. Between this Object, and the Place where 'tis to be repreſented, there is to be placed a broad Convex-glaſs, ground of ſuch a convexity, as that it may repreſent the Object diſtinct on the ſaid place; which

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any one, that hath any inſight in the *Opticks*, may eaſily direct. The nearer it is placed to the object, the more is the Object magnified on the Wall, and the further off, the leſs; which diverſity is effected by Glaſſes of ſeveral ſpheres. If the Object cannot be *inverted* (as'tis pretty difficult to do with Living Animals, Candles, &c.) then there muſt be *two* large Glaſſes of convenient Spheres, and they plac'd at their appropriated diſtances (which are very eaſily found by tryals) ſo as to make the repreſentations *erect* as well as the Object.

Theſe Objects, Reflecting and Refracting Glaſſes, and the whole Apparatus; as alſo the Perſons employ'd to order, change and make uſe of them, muſt be placed without the ſaid high Window or Hole, ſo that they may not be perceived by the Spectators in the room; and the whole Operation will be eaſily perform'd.

The particular manner of preparing the Objects, adapting the Glaſſes, collecting the Rayes of the Sun, varying the Object, making the repreſentations of the Sky (by the help of other Glaſſes) and of Clouds (by the help of Smoak) &c. I intend, hereafter, when I have leiſure and opportunity, more particularly to deſcribe; as alſo the way, of making a natural *Landskip*, &c. to appear upon the walls of a *light* room; which will not only be very pleaſant, but of great uſe in painting. Whatſoever may be done by means of the Sun-beams in the daytime, the ſame may be done with much more eaſe in the night, by the help of torches, lamps, or other bright lights, plac'd about the Objects, according to the ſeveral ſorts of them.

So far our Inventor; who hath not contented himſelf with the bare ſpeculation, but put the ſame in practice ſome years ſince, in the preſence of ſeveral members of the R. *Society*, among whom the *Publiſher* had the good fortune to ſee the ſucceſsful performance of what is here anſwered.

An Extract of a Letter lately written by Mr. S. Colepreſſe, *from* Leiden, *to the* Publiſher, *about the making of counterfeited* Opal, *and the Recovery of the Art of making* Red-glaſs.

SIR, You may perchance remember, that ſome time ſince,